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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,384

11/26/2003

Mark M. Leather

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9662

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08/07/2007

ADVANCED MICRO DEVICES, INC.

C/O VEDDER PRICE KAUFMAN & KAMMHOLZ, P.C.

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CHICAGO, IL 60601

EXAMINER

LAY, MICHELLE K

ART UNIT

PAPER NUMBER

2628

MAIL DATE

DELIVERY MODE

08/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/724,384

Applicant(s)

LEATHER ET AL.

Examiner

Michelle K. Lay

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 20070711.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The amendment filed 07/11/2007 has been entered and made of record. The amendment to the drawings and claims 2, 6, 10, 18 has overcome the drawing and claim objections respectfully, made in the Non-Final office action filed 04/10/2007. Claims 1-24 are pending.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Information Disclosure Statement

The information disclosure statement(s) (IDS) submitted on 07/11/2007 is being considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al. (6,222,550 B1) in view of Sperber et al. (6,557,083).

Sperber teaches the limitation of claim **1-24** with the exception explicitly teaching a single graphics chip. However, Sperber teaches an integrated-circuit die in which a processor core and graphics core are integrated on a single chip.

In regards to claims **1, 9, and 17**, Rosman teaches a 3D graphics processor having parallel pipelines. A hardware accelerated Geometry Engine (said **front-end**) may supply the vertices of triangles to triangle setup engine (28) [c.6 L.25-32]. Once a triangle is setup by triangle setup engine (28), its gradients and vertices are sent to the next available triangle pixel-pipeline(s) (40,41) (said **back-end**). Triangle pixel-pipelines (40,41) are each pixel engines (PE) that receive the three vertices for a triangle. Triangle pixel-pipelines (40,41) output pixel values to a frame buffer [c.6 L.33-45].

Sperber teaches an integrated-circuit die in which a processor core (310) and graphics core (320) are integrated on a single chip [Fig. 3; c.4 L.20-35].

Therefore, it would have been obvious to one of ordinary skill in the art to implement the Geometry Engine of Rosman into the processor core of Sperber, and the pixel-pipelines of Rosman into the graphics core of Sperber because it is known in the art that significant amount of rendering causes a burden on the bandwidth of the memory channel, which in turn can reduce the performance of the graphics system. Furthermore, memory demands by the graphic engine can reduce CPU performance, as well as other units [Sperber: c.2 L.13-31]. Thus, by implementing both the front-end and back-end of Rosman on a single chip, the interfaces between units are reduced in size, resulting in a faster interaction. Additionally, the single chip occupies less real

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estate within the system, therefore providing either a smaller system overall, or more space for other internal devices.

In regards to claims **2**, **10**, and **18**, Rosman teaches the triangle setup engine (28) [Fig. 3] directs the gradients and vertices to the triangle pixel-pipelines (40,41) [c.6 L.33-35].

In regards to claims **3**, **11**, and **19**, Rosman teaches comparison of pixels is made to an image of pixels along a tile [c.5 L.64-68].

In regards to claims **4**, **12**, and **20**, Rosman teaches FIFO (32) buffers [c.6 L.55-60].

In regards to claim **5**, **13**, and **21**, Rosman teaches a raster engine (34) (said, **rasterizer**), span engine (30) (said **scan converter**), register (42) stores triangle attributes (said **texture unit**), registers (42,44) include shadow register (said **unified shader**) [c.6 L.46-64]. Furthermore, one or more triangle setup engine(s) receives triangle primitives from a host or geometry engine and generates vertex color, texture and other attributes as well as their gradients [*abstract*].

In regards to **6**, **14**, and **22**, Rosman teaches z-buffering [c.6, L.65-68]. Additionally, the method/system of Rosman generates pixel colors and write the colors into a buffer (said **color buffer**) [c.4 L.1-13]. Additionally, Sperber teaches the use of a Z-buffer that lies

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In regards to claims **7, 8, 15, 16, 23, and 24**, the 3D graphics processor of Rosman generates vertex color, texture and other attributes as well as other gradients. Rosman further teaches utilizing multiple rendering pipes. It would have been obvious to one of ordinary skill in the art that the implicit z-buffer as utilized by Rosman needed to perform depth functions would function with the shader and the scan converter in order to generate a single 3-D display. Furthermore, the "early" and "late" z-interface is within the same z-buffer, Thus the "early" and "late" z-interface is dependent and defined on the step process that the generation occurs.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matsuo et al. (6,219,062 B1)

Vainsencher (5,977,997)

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday-Friday 7:30a-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee M. Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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08.02.2007 mkl


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